Macquarie University, Virtual Reality (VR) Lab @ Simulation Hub

Virtually any possibility with Digital Projection

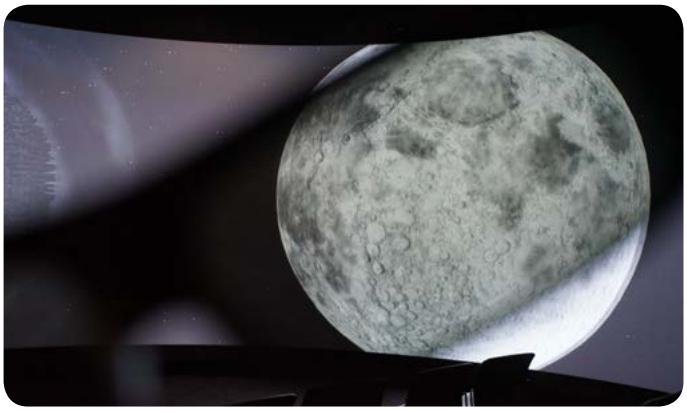
Executive Summary

The Macquarie University Simulation Hub houses a range of virtual reality environments in a single location, allowing University and industry experts to work together on research projects across a broad range of disciplines.

The Virtual Reality (VR) Lab is just one of five different environments available in the Simulation Hub encompassing a variety of scenarios. The VR Lab was established at Macquarie University in 2003, and was upgraded in early 2015, as part of a move to incorporate it within the Simulation Hub. As part of the upgrade the team at Macquarie University were looking for a visual system that would enhance their virtual experience.

Project Objectives

Provide a high performance 3D capable projection solution to allow participants at the VR Lab to fully immerse themselves in the virtual research environment.



Project Challenges

The projection solution needed to provide a seamless experience with a 240 degree viewing angle, allowing users to be part of a full immersive experience. High resolution projection was required for large scale imaging.

Product Solution

The Simulation Hub has cutting edge technologies to be shared by various departments and installed an 8m diameter (18.8 wide) 240 degree, cylindrical, fully immersive laser projection system at the new VR Lab.

A Digital Projection HIGHlite Laser 11k (WUXGA 1920 1200) was chosen to provide an active stereo 3D, 18.8m wide (240 degree) Cylindrical Panoramic projection 4-channel warp and blend solution.

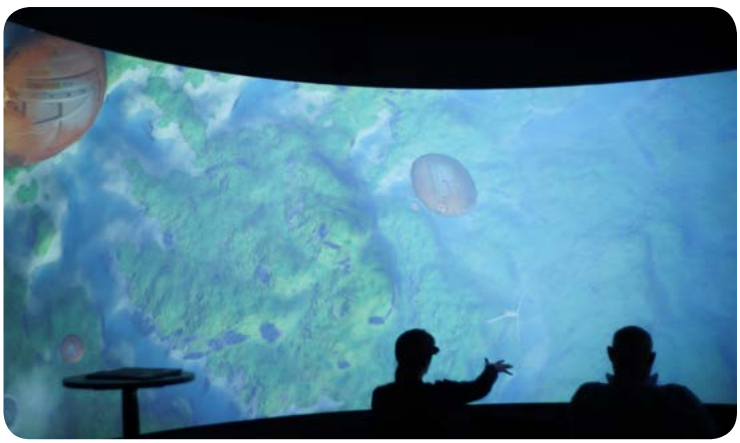
Four projectors in total were required to complete the VR Lab. The HIGHlite Laser 11k offered Macquarie University flexible mounting orientation, built in edge blend and lamp free technology to meet the complex requirements of the VR Lab.

Results

The original VR Lab achieved a high level of immersion using a curved front projection screen, filling 160 degrees of the viewers' peripheral vision, projecting onto the canvas in active stereo (frame sequential stereo) to simulate depth in the 3D virtual environment.

The upgraded VR Lab built on the immersive sensation created by the Digital Projection HIGHlite Laser 11k by incorporating other features such as 3D positional audio, and a cyber glove input device.

The VR Lab is used by the VISOR (Virtual and Interactive Simulations of Reality) research group which has an evolving history of ongoing interdisciplinary research collaboration between the Departments of Computing and Psychology.



A virtual reality environment works to totally immerse participants in the virtual world. Current research being conducted by VISOR includes designing futuristic interfaces for human-computer interaction. The virtual reality tools being developed in the VR Lab using Digital Projection technology allow today's computers to be used with less effort.